

## ABSTRACT

The present invention aims at achieving an optical signal processing system which converts a higher speed optical signal to electrical signals by time-demultiplexing the signal with low-speed electrical signals.

The present invention offers an improved optical signal processing system that converts a serial pulse train optical signal with transmission speed  $N$  to parallel pulse train electrical signals. This system is characterized by providing a serial-parallel converter in which at least two optical switches are cascaded, each of which outputs optical signals with transmission speed  $M$  ( $N > M$ ) to one of the two output terminals and outputs the remaining optical signals to the alternative one of said two output terminals by switching connection to said output terminal, receiving parts which convert optical signals from one of the two output terminals of each of the above optical switches to electrical signals, a synchronizing circuit which outputs timing signals in synchronization with electrical signals output from these receiving parts, and drivers which cause the above described optical switches to switch their connections based on timing signals output from the above synchronizing circuit.